

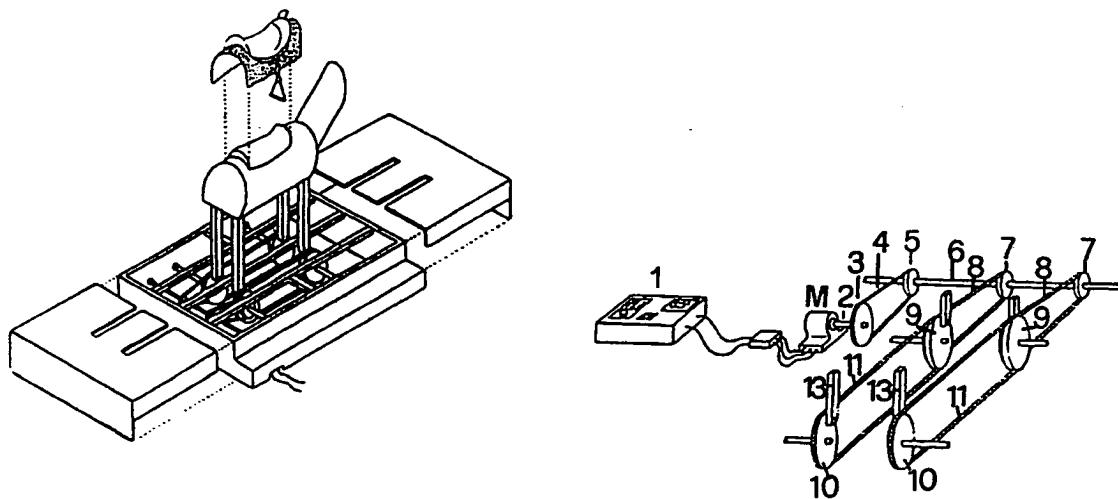


## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(54) Title: AN ELECTROMECHANICAL DEVICE FOR THE SIMULATION OF HORSE RIDING AT ALL TREADS



## (57) Abstract

An electromechanical device for the simulation of horse riding, at all treads, having means for performing translation movements comprises: a control and regulation unit (1) for the rotation speed of an electric motor (M); a disk system (9, 10) having four disks (9) to which four uprights (13) are connected in out of centre points (12) carrying a horse mock-up with a saddle; and a coupling system between the electric motor (M) and the disk system (9, 10) comprising a main axis (6), a first pulley-belt-system (3-5) between the electric motor (M) and the main axis (6) and a second pulley-belt-system (7, 8, 11) between the main axis (6) and the disk system (9, 10).

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"AN ELECTROMECHANICAL DEVICE FOR THE SIMULATION OF HORSE RIDING AT ALL TREADS"

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The present invention concerns an electromechanical device for the simulation of horse riding at all treads, comprising means for performing translation movements in front and back direction on the sagittal plane, in all similar to those of real horses.

10 The present invention takes its origin from the need of having, in a gymnastic school, a simulator that allows the beginners to perform all exercises for learning horse riding, and to advanced ones the training for increasing the muscles of the legs (femoral biceps, iliac psoas), the upper and lower abdominal wall, the lumbar area and the long muscles of the back.

15 20 A further advantage of the device according to the present invention is that it allows the training for the general coordination, essential in accompanying the movements of the horse, and the eventual exhibition of experts in the most different horse acrobatics.

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The present invention, as claimed in the claims, solves the problem of creating an electromechanical device for the simulation of the riding steps of a horse like step, trot and

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- 2 -

gallop, comprising a disk system being out of axis from the rotation centre which, by means of four uprights on which a mock-up of a riding horse is provided, make perform to said mock-up translation movements in front and back direction on the sagittal plane, in all similar to those of real horses.

The present invention will be described more in detail hereinbelow relating to the attached drawings in which a preferred embodiment is shown.

Figure 1, shows an external perspective view of the device according to the present invention.

Figure 2, shows an exploded view of the components of the device according to the present invention.

Figure 3, shows a variant of the moving device of the mock-up of the riding horse.

The figures show an electromechanical device for the simulation of horse riding, at all treads, comprising:

- a control and regulation central 1 for the rotation speed of the electric motor M;
- an electric motor M, the axis 2 thereof - through pulley 3, the belt 4 and the pulley 5 - puts into rotation the

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- 3 -

motor axis 6;

- two pulleys 7 which, together with belts 8, put into rotation disks 9 and 10, connected by coupling belts 11;

- two disks 9 and two disks 10, put into rotation by the cinematic belt M-3-4-5-6-7-8, and connected in out-of-centre points 12 to the four uprights 13, out of one piece with the body C of the horse mock-up with a saddle S so that following to the rotation of the disks 9 and 10 said uprights rise and get down and said body performs translation movements in front and back direction on the sagittal plane.

For what concerns the working of the device according to the present invention, the regulation of the control central 1, by means of the cinematic belt M-3-4-5-6-7-8, determines different rotation speeds of the disks 9 and 10, so as to get, from a step tread, to a quicker one of trot and finally of gallop.

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- 4 -

**CLAIMS**

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1. An electromechanical device for the simulation of horse riding, at all treads, comprising means for performing translation movements in front and back direction on the sagittal plane, similar to those of real horses, characterized in:
  - a control and regulation central (1) for the rotation speed of the electric motor (M);
  - an electric motor (M), the axis (2) thereof - through pulley (3), belt (4) and the pulley (5) - puts into rotation the motor axis (6);
  - two pulleys (7) which, together with belts (8), put into rotation disks (9) and (10), connected by coupling belts (11);
  - two disks (9) and two disks (10), put into rotation by the cinematic belt (M-3-4-5-6-7-8), and connected in out-of-centre points (12) to the four uprights (13), out of one piece with the body (C) of the horse mock-up with a saddle (S) so that following to the rotation of the disks (9) and (10) said uprights rise and get down and said body performs translation movements in front and back direction on the sagittal plane.
- 25 2. An electromechanical device according to claim 1 characterized in that the regulation of the control central

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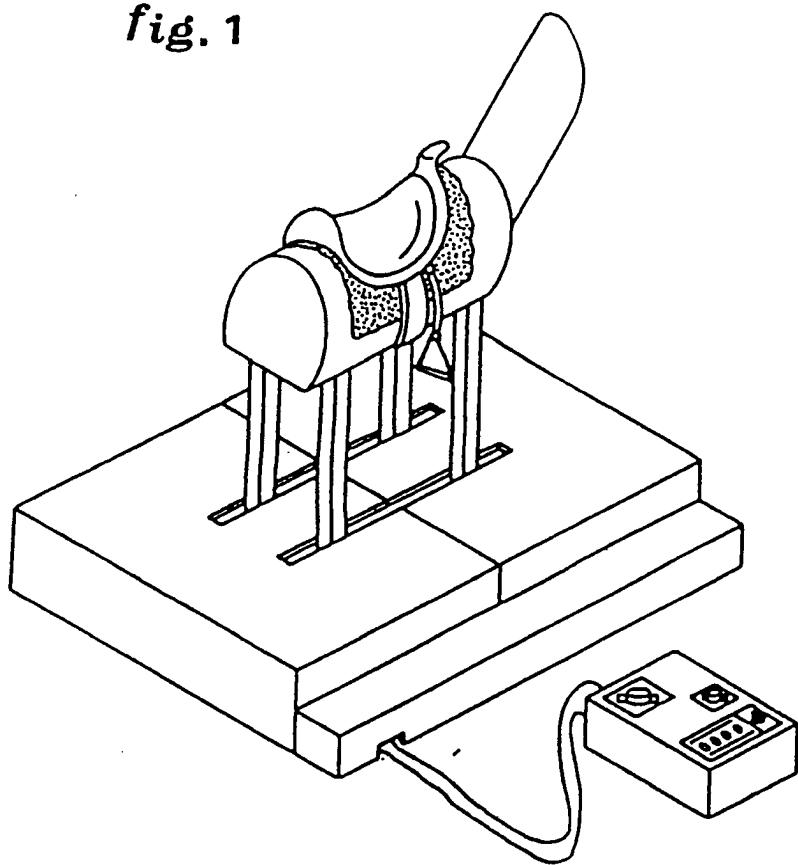
- 5 -

(1), by means of the cynematic belt (M-3-4-5-6-7-8), determines different rotation speeds of disks (9, 10) so as to get, from a step tread, to a quicker one of trot and finally to gallop.

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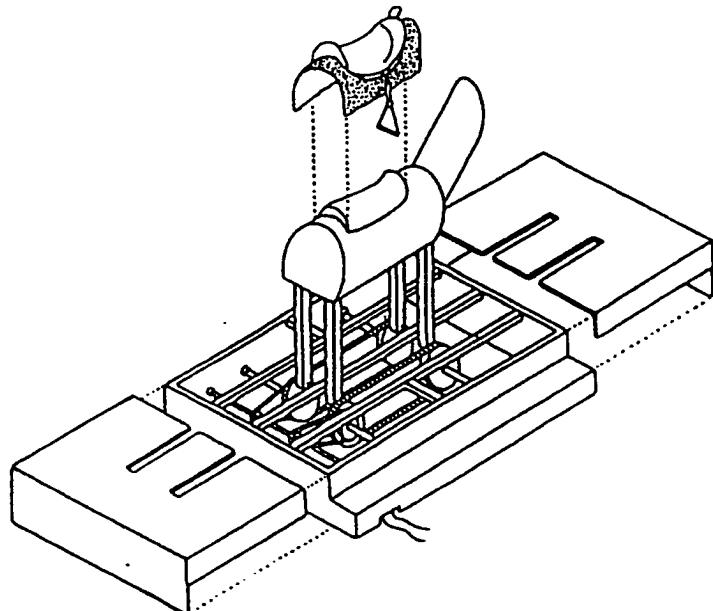
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*fig. 1*

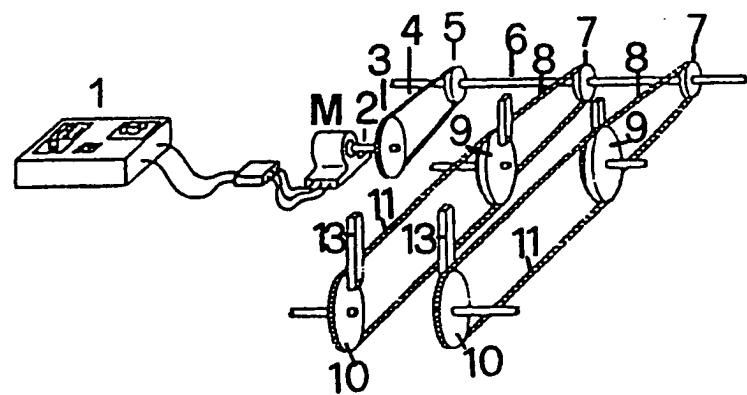


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*fig. 2*



*fig. 3*



**SUBSTITUTE SHEET**

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/IT 91/00025

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all)<sup>6</sup>

According to International Patent Classification (IPC) or to both National Classification and IPC

Int.Cl. 5 A63B69/04

## II. FIELDS SEARCHED

Minimum Documentation Searched<sup>7</sup>

Classification System	Classification Symbols
Int.Cl. 5	A63B

Documentation Searched other than Minimum Documentation  
to the Extent that such Documents are Included in the Fields Searched<sup>8</sup>III. DOCUMENTS CONSIDERED TO BE RELEVANT<sup>9</sup>

Category <sup>10</sup>	Citation of Document, <sup>11</sup> with indication, where appropriate, of the relevant passages <sup>12</sup>	Relevant to Claim No. <sup>13</sup>
X	DE,A,3 941 498 (MEITEC CORP.) June 21, 1990 see page 2, line 44 - line 54 see page 3, line 15 - page 4, line 41 see page 5, line 7 - line 66 see figures 1-6 -----	1,2
A	US,A,1 791 777 (WEBB) February 10, 1931 see page 1, line 31 - page 2, line 54 see figures 1,2 -----	1,2

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## IV. CERTIFICATION

Date of the Actual Completion of the International Search

2 16 SEPTEMBER 1991

Date of Mailing of this International Search Report

22.10.91

International Searching Authority

EUROPEAN PATENT OFFICE

Signature of Authorized Officer

Schönleben J.E.F.

ANNEX TO THE INTERNATIONAL SEARCH REPORT  
ON INTERNATIONAL PATENT APPLICATION NO.

IT 9100025  
SA 46842

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report.  
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16/09/91

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